[Title of the Document]   SCOPE OF CLAIM FOR PATENT
[Claim 1]

An intake air amount control system for an internal combustion engine, which controls respective amounts of intake air drawn into cylinders via an intake passage that branches from a branching point into a plurality of passages, by respective variable intake air amount devices, independently of each other, comprising:

intake air amount parameter-detecting means for detecting an intake air amount parameter indicative of an amount of intake air at a location upstream of the branching point of the intake passage;

variation parameter-calculating means for calculating a variation parameter indicative of variation in intake air amount between the cylinders, based on a model formed by modeling an intake system of the engine including the intake passage, according to the detected intake air amount parameter, on a cylinder-by-cylinder basis;

correction amount-calculating means for calculating, on a cylinder-by-cylinder basis, a correction amount for correcting the respective amounts of intake air drawn into the cylinders, according to the variation parameter calculated for each cylinder; and

control means for controlling each variable intake air amount device according to the correction amount calculated for each cylinder.
[Claim 2]

An intake air amount control system as claimed in claim 1, wherein the model defines a relationship between an estimated value of the intake air amount

parameter and a plurality of simulation values which simulate behaviors of the respective amounts of intake air drawn into the cylinders, and

wherein the variation parameter is set to a model parameter of the model, and

wherein said variation parameter-calculating means comprises:

simulation value-generating means for generating the simulation values;

estimation means for estimating the estimated value of the intake air amount parameter, based on the model; and

identification means for identifying the variation parameter based on the detected intake air amount parameter and the generated simulation values, such that the estimated value of the intake air amount parameter becomes equal to the detected intake air amount parameter.

[Claim 3]

An intake air amount control system as claimed in claim 1, wherein said correction amount-calculating means calculates the correction amount according to the variation parameter with a response-specifying control algorithm.

[Claim 4]

An intake air amount control system as claimed in claim 2, wherein said correction amount-calculating means calculates the correction amount according to the variation parameter with a response-specifying control algorithm.

[Claim 5]

An intake air amount control system as claimed in claim 1, wherein the variable intake air amount devices

are formed by variable intake cam phase mechanisms that change phases between intake cams for actuating respective intake valves of the cylinders, and an intake camshaft.

[Claim 6]

An intake air amount control system as claimed in claim 3, wherein the variable intake air amount devices are formed by variable intake cam phase mechanisms that change phases between intake cams for actuating respective intake valves of the cylinders, and an intake camshaft.

[Claim 7]

An intake air amount control system as claimed in claim 4, wherein the variable intake air amount devices are formed by variable intake cam phase mechanisms that change phases between intake cams for actuating respective intake valves of the cylinders, and an intake camshaft.

[Claim 8]

An intake air amount control system as claimed in claim 5, wherein each variable intake cam phase mechanism is formed by a hydraulically-driven variable intake cam phase mechanism that is driven by supply of oil pressure, and

wherein said control means controls oil pressure supplied to said hydraulically-driven variable intake cam phase mechanism.

[Claim 9]

An intake air amount control system as claimed in claim 6, wherein each variable intake cam phase mechanism is formed by a hydraulically-driven variable intake cam phase mechanism that is driven by supply of oil pressure, and

wherein said control means controls oil pressure supplied to said hydraulically-driven variable intake cam phase mechanism.

[Claim 10]

An intake air amount control system as claimed in claim 7, wherein each variable intake cam phase mechanism is formed by a hydraulically-driven variable intake cam phase mechanism that is driven by supply of oil pressure, and

wherein said control means controls oil pressure supplied to said hydraulically-driven variable intake cam phase mechanism.